REMARKS

Claims 1, 8, 9, and 18-20 have been amended. No claims are added or canceled. Hence, Claims 1-25 are pending in the Application.

I. INTERVIEW SUMMARY

Applicant thanks Examiners Seema Rao and Jianye Wu for a telephonic interview, which was held on Wednesday, September 17, 2008. Claim 1 was discussed in relation to RFC 2676 and *Teruhi*. The allowability of Claim 1 was discussed. Examiner Seema Rao suggested making a further clarification in Claim 1. It was agreed that Claim 1 as clarified would advance prosecution.

II. ISSUES RELATING TO 103(a) —*TERUHI*, *MOY* AND *RFC 2676*

Claims 1, 2, 4, 5, and 7 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Teruhi et al., U.S. Pub. No. 2003/0072269 (hereinafter *Teruhi*) and J. Moy et al., IETF RFC 1247 "OSPF Version 2", July 1991 (hereinafter *Moy*) and further in view of Apostolopoulos et al., INTF RFC 2676 "QoS Routing Mechanisms and OSPF Extensions", August 1999 (hereinafter *RFC 2676*). The rejection is respectfully traversed.

Independent Claim 1

The Office Action Fails to Consider All Claim Words

"All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Claim 1 recites "selecting, from a set of routers, a particular router that is associated with a first actual time that is a **shortest time** among all times associated with routers in the set of routers … wherein **the first actual time** has been updated with **a**

previous actual time taken for a previous data packet to travel to a previous destination indicated by the previous data packet."

Thus, in order to meet these features of Claim 1, a reference must at least show a particular router that is associated with an actual time taken for a previous data packet to travel to a previous destination indicated by the previous data packets. In addition, this actual time is a shortest time among all times associated with the routers.

The Office Action appears to ignore the recited features of Claim 1. Instead, the Office Action essentially asserts that these recited features of Claim 1 are the same as "selecting a router from a set of routers which has a shortest path to a destination from a routing table" (page 5 the last two lines), a phrase that does not appear in Claim 1.

The Office Action substitutes the claim term "a first actual time" with a non-existing phrase "a shortest path." This substitution is improper, as the Office Action has not provided any evidence to indicate that "a shortest path" as used in the cited reference is a time, much less a first actual time that is taken for a previous data packet to travel to a previous destination indicated by the previous data packets. Indeed, a shortest path from a routing table may be a number of **hops**, whereas the shortest time of Claim 1 is explicitly recited as a **time** taken for a data packet to travel to its destination (i.e., a destination as indicated by the packet).

Since the Office Action has failed to consider all words in Claim 1 in judging the patentability of that claim against the prior art, the rejection is improper.

The References Cited by the Office Action Fail to Support the Rejection

The Office Action (page 5) asserts that paragraph 7 of *Teruhi* discloses selecting a router that has a shortest path to a destination. This assertion is incorrect. First, as noted before, Claim 1 does not recite "a shortest path". Rather, Claim 1 recites an actual time.

Second, the cited portion of *Teruhi* only describes monitoring throughput of routes and switching from one route to another router based on the results of the monitoring. Nothing in the cited portion of *Teruhi* describes selecting a router that has a shortest path to a destination, as asserted by the Office Action.

The Office Action (page 7) asserts that *RFC 2676* at Section 1.2 page 5 line 8 "teaches the shortest path in terms of traveling time." The excerpt in *RFC 2676* reads "Specifically, the extension to LSAs that we initially consider, include only available bandwidth and delay." Apparently, the Office Action extrapolates "delay" in *RFC 2676* to be an actual time. The Office Action is incorrect for the following reasons. First, the excerpt describes extensions to LSAs, and the LSAs are protocol packets. LSAs have nothing to do with defining a shortest path in terms of traveling time, contrary to the assertion of the Office Action.

Second, for the same reason that a "shortest path" in OSPF and an actual time are different types of quantities, the "shortest path" in OSPF and the traveling time termed by the Office Action are different types of quantities. Thus, the "shortest path" in OSPF cannot be defined in terms of traveling time, contrary to the assertion of the Office Action.

Third, the excerpt in *RFC 2676* only states that LSA packets include available bandwidth and delay information. Nothing in this excerpt states that a shortest path is associated with the asserted shortest delay. The fact that OSPF as specified in *RFC 2676* includes available bandwidth information and other metric information other than delay indicates that a shortest path in OSPF is not necessarily related to a router that is associated with an actual time that is shortest in the routers, as featured in Claim 1.

The Office Action's Assertions Are Not Supported by the References Cited

The Office Action (page 2) asserts that "... by definition, the 'delay' disclosed by Teruhi refers to the time difference between the time that a RTCP packet leaving a node A and the time the packet arrives a node B, which is the actual traveling time from the node A to the node B." Essentially, the Office Action asserts that a "delay since last sender report DLSR" reported in RTCP-SR and RTCP-RR (74 of FIG. 4 and FIG. 5 of *Teruhi*) is an actual time taken for a RTCP packet to travel from node A to node B.

However, this assertion is incorrect. There is no disclosure in *Teruhi* that the delay 74 is a time that a control packet (a RTCP-SR packet) takes to travel from the sender to the receiver. Delay 74 as disclosed in *Teruhi* is in fact the difference between the receiving time of the last sender report and the generation time of the receiver report. *See* FIG. 9 of *Teruhi*. In other words, delay 74 is the time during which the destination node sits between a time of the receipt of a RTCP-SR from the source node and another time of the transmission of a RTCP-RR from the destination node. As indicated in FIG. 9 of *Teruhi*, the time for a RTCP-SR or a RTCP-RR to travel from node A to node B is not measured in *Teruhi*.

Therefore, the record does not support the assertion of the Office Action that delay 74 of *Teruhi* is an actual time taken for a packet to travel from node A to node B.

The Office Action (page 3) asserts the following:

a) The delay time is the that a packet travel from one node of the link to the other, and the delay time from one end node of a path to the other end node of the path is the actual time of a packet traveling through a path is the delay time (a path can be considered as a link with the two end nodes);
b) Using packet actual traveling time (or delay) to update the routing table does not necessary lead to a unstable routing table. For example, the routing table records the minimum delay of the link, which is changed only when the new delay time is smaller than the currently link delay time, and routing table would eventually become stable.

Notably, while the Office Action has asserted how OSPF operates and made a

number of assumptions, the Office Action fails to support its assertion and assumptions from any evidence in the record. The cited references fail to show that "[t]he delay time is the [time] that a packet travel from one node of the link to the other", as asserted by the Office Action. The fact is that evidence in the record, including the cited references, fails to show that routing table is updated in the manner as described by the Office Action.

In OSPF, cost metrics relating to a link, which include the above mentioned propagation delay of a link, are normally configured parameters, having nothing to do with the actual traveling time for a particular packet. *See*, *e.g.*, RFC 1586 at page 3 STEP 4 "Configure OSPF … specifying … link metric", which was submitted in a previous IDS statement accompanying Applicant's last response.

Indeed, contrary to the unsupported assertions of the Office Action, OSPF as described in *Moy* and *RFC 2676* does not teach or suggest that a link metric such as delay or available bandwidth would be an actual traveling time of a packet. OSPF as described in *Moy* and *RFC 2676* also does not teach or suggest that a shortest path is determined or defined by a delay (the references only indicate that link metrics such as an available bandwidth and delay can be included in LSAs). OSPF as described in *Moy* and *RFC 2676* further does not teach or suggest that a shortest path is determined or defined by a delay that is an actual traveling time of a packet.

As *Teruhi*, *Moy* and *RFC 2676*, taken individually or in combination, fail to disclose at least one element in Claim 1, Claim 1 is patentable over *Teruhi, Moy* and *RFC 2676*. Reconsideration is respectfully requested.

Claims 2, 4, 5, and 7

Claims 2, 4, 5, and 7 are dependent upon and thus include each and every feature of Claim 1 discussed above. Therefore, it is respectfully submitted that Claims 2, 4, 5,

and 7 are allowable for at least the reasons given above with respect to Claim 1. Reconsideration is respectfully requested.

III. ISSUES RELATING TO 103(a) —*TERUHI* AND *RFC 2676*

Claims 3 and 6 are rejected under 35 U.S.C. § 103(a) as allegedly obvious over *Teruhi* in view of *RFC 2676*. The rejection is respectfully traversed.

Claims 3 and 6 are dependent upon and thus include each and every feature of Claim 1 discussed above. Therefore, it is respectfully submitted that Claims 3 and 6 are allowable for at least the reasons given above with respect to Claim 1. Reconsideration is respectfully requested.

IV. ISSUES RELATING TO 103(a) —*MOY* AND *RFC 2676*

Claims 8 and 18-20 are rejected under 35 U.S.C. § 103(a) as allegedly obvious over *Moy* in view of *RFC 2676*. The rejection is respectfully traversed.

Claims 8 and 18-20 each recite similar features as those discussed above with respect to Claim 1. For example, Claim 18 is a computer-readable medium claim that corresponds to method Claim 1. Claim 19 is recited in a format allowable by 35 USC §112, and corresponds to method Claim 1 discussed above. Claim 20 is an apparatus claim that corresponds to method Claim 1. Therefore, Claims 8 and 18-20 are patentable for at least the same reasons discussed above as to Claim 1. Reconsideration is respectfully requested.

V. ISSUES RELATING TO 103(a) —*CARO* AND *RFC 2676*

Claims 1-25 are rejected under 35 U.S.C. § 103(a) as allegedly obvious over Gianni Di Caro et al., "AntNet: Distributed Stigmergetic Control for Communications Networks", Journal of Artificial Intelligence Research, 12/1998 (hereinafter *Caro*) in view of *RFC 2676*. The rejection is respectfully traversed.

Caro fails to disclose a number of features in Claim 1. For example, Claim 1 recites "selecting, from a set of routers, a particular router that is associated with a first actual time that is a shortest time among all times associated with routers in the set of routers, **wherein the first actual time has been updated with a previous actual time taken for a previous data packet to travel to a previous destination indicated by the previous data packet**" (emphasis added). On the other hand, *Caro* only discloses selecting a neighbor based on **probabilistic values** stored in the routing table. There is no disclosure in *Caro* that the probabilistic values are a previous actual time taken for a previous data packet to travel to a previous destination indicated by the previous data packet, as featured in Claim 1. Indeed, since *Caro* selects a neighbor based on probabilistic value**s**, a shortest path in *Caro* cannot have 100% probability, as that would mean the selection would be deterministic, rather than probabilistic. A deterministic approach is clearly against the operating principle of *Caro*.

The Office Action correctly concedes on page 9 that *Caro* (which the Office Action inadvertently refers to as "Teruhi") "**is silent on** the criterion is that the first packet is predicted to reach the destination in a shortest time (the first time)." However, the Office Action states that "[i]n the same field of endeavor, RFC 2676 further teaches routing the shortest path in terms of traveling time (delay, line 8 of first paragraph in Section 1.2, Page 5)."

Respectfully, as previously discussed with respect to the 103 rejection involving *RFC 2676*, there is no disclosure in *RFC 2676* for selecting, from a set of routers, a particular router that is associated with a first actual time that is a shortest time among all times associated with routers in the set of routers, **wherein the first actual time has been updated with a previous actual time taken for a previous data packet to travel**

to a previous destination indicated by the previous data packet, as featured in Claim 1.

Further, a combination of the two references conflicts with the teaching of at least one of the references, and violates at least one principle of operation of the references.

A probabilistic model is fundamental to the operation of *Caro*. As described in the reference, all the steps, generating packets, selecting neighbor nodes to forward, updating routing information, etc., are all inextricably tied to the probabilistic model. For example, as *Caro* indicates on page 328 (item 7.i), "[t]he **statistical model** has to be able to capture this variability and to follow in a robust way the fluctuations of the traffic. **This model plays a critical role** in the routing table updating process (see item (ii) below)" (emphasis added). Furthermore, according to *Caro*, routing performance is improved under the AntNet because of the use of probabilistic entries (on page 330, "**The use of probabilistic entries is very specific to AntNet** and we observed it to be **effective**, improving the performance, in some cases, even by 30%-40%. Routing tables are used in **a probabilistic way not only** by the ants **but also** by the data packets. This **has been observed to improve** AntNet performance, which means that the way the routing tables are built in AntNet is **well matched with a probabilistic distribution** of the data packets over all the good paths" (emphasis added)).

A combination of *RFC 2676* and *Caro*, as suggested by the Office Action, would completely vitiate the advantages gained by the probabilistic model of *Caro*, rendering the critical role played by the probabilistic model in *Caro* unfulfilled.

Thus, under this proposed combination as asserted by the Office Action, *Caro* and *RFC 2676* must be integrated in such a manner that the probabilistic route selection in *Caro* is replaced with selecting a neighbor router that has a lowest amount of delay time

from source node to the destination node in searching the best routing. As a result, *Caro*'s critical probabilistic model including selecting routers based on probabilistic values must be replaced in this proposed combination and its operating principle violated.

As *Carol* and *RFC 2676*, taken individually or in combination, fail to disclose at least one element in Claim 1 and as the proposed combination is legally impermissible for violation of at least one of the operating principles of the cited references, Claim 1 is patentable over *Carol* and *RFC 2676*. Reconsideration is respectfully requested.

Claims 8, 9 and 18-20

Claims 8, 9 and 18-20 each recite similar features as those discussed above with respect to Claim 1. For example, Claim 18 is a computer-readable medium claim that corresponds to method Claim 1. Claim 19 is recited in a format allowable by 35 USC §112, and corresponds to method Claim 1 discussed above. Claim 20 is an apparatus claim that corresponds to method Claim 1. Therefore, Claims 8, 9 and 18-20 are patentable for at least the same reasons discussed above as to Claim 1. Reconsideration is respectfully requested.

Claims 2-7, 10-17 and 21-25

Claims 2-7, 10-17 and 21-25 are dependent upon and thus include each and every feature of Claim 1 discussed above. Therefore, it is respectfully submitted that Claims 2-7, 10-17 and 21-25 are allowable for at least the reasons given above with respect to Claim 1.

VI. CONCLUSION

For the reasons set forth above, Applicant respectfully submits that all pending claims are patentable over the art of record, including the art cited but not applied.

Accordingly, allowance of all claims is hereby respectfully solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Respectfully submitted,

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